



OSWER Innovations Pilot

Urban Waste to Biodiesel Initiative

The Office of Solid Waste and Emergency Response (OSWER) sponsors a series of innovative pilots to test new ideas and strategies for environmental and public health protection. A small amount of money is set aside to fund creative approaches to waste minimization, energy recovery, recycling, land revitalization, and homeland security that can be replicated across various sectors, industries, communities, and regions. We hope these pilots will pave the way for programmatic and policy recommendations by demonstrating the environmental and economic benefits of creative, innovative approaches to the difficult environmental challenges we face.

BACKGROUND

Biodiesel is a sustainable fuel source that reduces exhaust emissions of carbon monoxide, unburned hydrocarbons, particulate matter, and sulfur dioxide. Its use can improve air quality and help reduce dependency on limited energy resources and imports. While many public diesel fleet operators want to switch to biodiesel, current high costs and low availability limits its market share. Biodiesel production costs can be reduced by using low-cost raw materials such as waste cooking oil. Restaurants and hotels in the United States produce over 3 billion gallons of waste cooking oil annually, the majority of which is disposed of in sewers and landfills. Waste oil dumped into sewers blocks drains and pipes and causes 40% of sewer spills. This project cost-effectively uses waste oil as the biodiesel feedstock, thereby converting a waste product into a valuable resource.

PROJECT APPROACH/DESIGN

Ecology Action of Santa Cruz, in collaboration with the City of Santa Cruz, Santa Cruz Metropolitan Transportation District, a waste oil collector, biodiesel producer, a biodiesel supplier, and the California Restaurant Association will demonstrate the economic viability of a community-based biodiesel collection, production, and distribution chain in urban locations. The pilot focuses on

places without ready access to an affordable agricultural crop as the primary feedstock. The pilot will collect local waste oil and process it into biodiesel for distribution and sale to local public sector fleets.

The project addresses the current cost structure of biodiesel in commercial quantities. Currently, these cost structures are lowest where the feedstock crop, processing facilities and user community are relatively close geographically to one another. To match these cost advantages in areas where no "virgin" oil crop can be cost-effectively grown, an urban "crop" - waste cooking oil - is harvested. The program brings together the food service businesses that generate this urban crop, waste cooking oil collectors, biodiesel producers and suppliers, and local diesel fleet operators (i.e., school districts, public works departments) to form a self-reinforcing, sustainable business model. The result: improved environmental performance of each constituency and the community as a whole. The waste cooking oil collector will pick up both used vegetable oil and general tallow waste from restaurants and food service businesses and transport it separately to their central location. The collector will then deliver the clean waste cooking oil to the biodiesel producer for conversion into fuel. Finally, the

biodiesel producer will transport the finished product to the fleet operators at their desired locations. This strategy reduces the energy and transportation costs of both raw material and finished product. Keeping feedstock collection and delivery as well as biodiesel production and distribution in the same geographical area maximizes the environmental and economic benefits.

INNOVATION

This pilot will remove the cost disincentive from the use of biodiesel which is a major obstacle preventing this alternative fuel from becoming a viable market option. This project also addresses public fleet diesel pollution in a way that is new to this region and promotes the greening of food service and waste cooking oil/tallow collection businesses. The project team will identify scaling factors, organizational frameworks, ranges of possible costs, and limiting factors that reveal the “real world” costs and margins of each step in the biodiesel collection, production, and distribution chain. The economic and market data collected will provide important information on how this business model can be replicated elsewhere.

BENEFITS

Waste minimization will be achieved by recycling waste cooking oil. Air quality will be enhanced by the widespread use of biodiesel by reducing particulate, and carbon dioxide and carbon monoxide emissions. Water quality will be improved because the increased market value of waste cooking oil decreases the likelihood of its improper disposal into sewers, storm drains and waterways, reducing watershed and storm runoff pollution. The proposed local supplier-collector-producer-customer-system will extract the highest energy value from waste cooking oil for use in the local community. By producing this fuel locally in commercial quantities it will be substantially cheaper than imported virgin oil-based biodiesel and cost-competitive with petroleum diesel, thereby enabling public diesel fleet managers to convert to this cleaner fuel without adverse impacts on

operations.

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For additional information, visit the EPA OSWER Innovations web site at: www.epa.gov/oswer/iwg.